

REMARKS/ARGUMENTS

Favorable reconsideration of this application in view of the above amendments and in light of the following discussion is respectfully requested.

Claims 1-17 are pending, with Claims 3, 5-8, 16 and 17 being withdrawn from consideration. Claims 1-4 and 6-16 are amended without introducing any new matter.

The Office Action rejected Claims 1, 2, 4 and 9-15 under 35 U.S.C. § 103(a) as unpatentable over Toda (U.S. Patent Application Publication No. 2003/0146673) in view of Shin'el (U.S. Patent No. 6,147,584).

It is respectfully requested the rejection based on Toda and Shin'el be withdrawn.

Independent Claim 1 recites an input apparatus that includes a flexible wiring board and a piezoelectric actuator. The flexible wiring board includes a pair of through-holes that are formed so as to be aligned with each other. The piezoelectric actuator includes an upper surface and a lower surface on opposite sides of the piezoelectric actuator. The piezoelectric actuator is positioned on the flexible wiring board so as to bridge the pair of through-holes in the flexible wiring board such that end portions on the lower surface of the piezoelectric actuator contact the flexible wiring board at opposite ends of the piezoelectric actuator. A part of the flexible wiring board includes a spacer portion that is located between the pair of through-holes and that is positioned on the upper surface of the piezoelectric actuator.

Thus, amended Claim 1 requires a specific configuration in which a spacer portion of the flexible wiring board is positioned on an upper surface of the piezoelectric actuator, and end portions of a lower surface of the piezoelectric actuator contact the flexible wiring board at opposite ends of the piezoelectric actuator. The combined teachings of the cited references fail to disclose or suggest this specific configuration.

Turning first to Toda, the Office Action acknowledges that Toda fails to describe a flexible wiring board that includes the claimed through-holes.¹ Further, Applicants submit Toda fails to disclose or suggest a configuration in which a flexible wiring board is both positioned on an upper surface of a piezoelectric actuator and contacts end portions on a lower surface of the same piezoelectric actuator. Instead, as can be seen in FIGs. 1 and 2 of Toda, the circuit board 5 only contacts a single surface of the piezoelectric body 2.

Shin'el fails to cure the deficiencies in Toda. Initially, it is noted that Shin'el makes no mention whatsoever of piezoelectric actuators. Instead, Shin'el is directed to high frequency inductors or transformers that include electric coils having a small winding turn number.² The Office Action relies on the depiction in FIG. 13 of Shin'el for a teaching of a printed circuit board that includes a pair of through-holes.³ However, as described at column 7, line 52 to column 9, line 55 of Shin'el, the portion of Shin'el referenced by the Office Action relates to a process in which a transformer or an inductor is mounted on to a printed circuit board at the same time the transformer or inductor is formed. Such a disclosure has no relation whatsoever to the piezoelectric body 2 described in Toda nor the piezoelectric actuator recited in Claim 1.

Moreover, as can be clearly seen in Figures 15 and 16 of Shin'el, the resulting coil that is formed from the process described in Shin'el includes several strips 15b that are adhered to parts of a printed circuit board 17, but fails to disclose or suggest a piezoelectric actuator and the claimed mounting relationship with a flexible wiring board.

¹ See the Office Action at page 3, lines 6-18.

² See Shin'el at column 1, lines 9-15.

³ See the outstanding Office Action at the last paragraph of page 3 and the first paragraph of page 4.

Accordingly, even the combined teachings of Toda and Shin'el fail to disclose or suggest all the features recited in amended Claim 1. It is submitted Claim 1 (and the claims depending therefrom) are in condition for allowance.

Claims 14 and 15 each recite methods for producing an input apparatus.

The method in Claim 14 includes forming a pair of aligned through-holes in a flexible wiring board, and inserting a piezoelectric actuator into one of the pair of through-holes from a first side surface of the flexible wiring board and then inserting the piezoelectric actuator into the other of the pair of through-holes from a second side surface of the flexible wiring board that is on an opposite surface side of the flexible wiring board from the first side surface of the flexible wiring board so that opposite ends of the piezoelectric actuator contact the same surface of the flexible wiring board.

The method of Claim 15 includes forming a pair of aligned through-holes in a flexible wiring board and mounting a piezoelectric actuator that bonds the flexible wiring board so that the piezoelectric actuator bridges the pair of through-holes.

Turning to the cited references, as noted above, Toda fails to disclose or suggest a flexible wiring board that includes a pair of through-holes in combination with a piezoelectric actuator, and Shin'el fails to cure this deficiency. Specifically, although Shin'el describes a circuit board 17 that includes through-holes, the through-holes in Shin'el are utilized to simultaneously form and directly mount either an inductor or a transformer on the printed circuit, and in no way whatsoever relates to the mounting or inserting of a piezoelectric actuator on a flexible wiring board.

Accordingly, even the combined teachings of Toda and Shin'el fail to disclose or suggest all the features of Claims 14 and 15. It is submitted Claims 14 and 15 are in condition for allowance.

With respect to withdrawn Claims 3, 5-8, 16 and 17, it is respectfully requested that these claims be rejoined and allowed in accordance with M.P.E.P. §821.04 as Claims 3, 5-8 and 17 include the subject matter recited in Claim 1, and as Claim 16 includes the subject matter recited in Claim 15, each of which are believed to be in condition for allowance.

For the reasons discussed above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for allowance. Accordingly, a Notice of Allowance for Claims 1-17 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better condition for allowance, the Examiner is encouraged to contact Applicants' undersigned representative at the below-listed telephone number.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Bradley D. Lytle
Attorney of Record
Registration No. 40,073

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413-2220
(OSMMN 08/07)

Christopher A. Bullard
Registration No. 57,644